

THE Signal

Bimonthly Publication of the Society of Broadcast Engineers



The Association for
Broadcast and
Multimedia Professionals

www.sbe.org

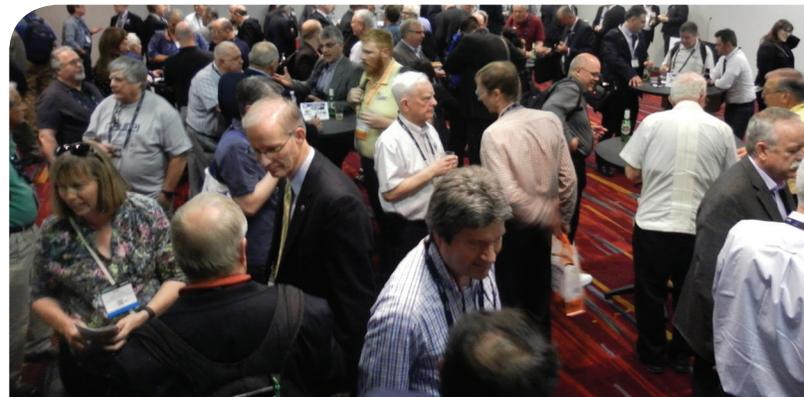
Volume 31, Issue 2 • April 2018

SBE Events Abound at the 2018 NAB Show

The NAB Show is just days away. As you plan how you will spend your time at the convention, be sure you include the many SBE events on your convention calendar. While the Ennes Workshop launches the convention on Saturday, the highlight for SBE members is the annual Membership Meeting, which will be followed by a reception. The Membership Meeting will be held on Tuesday, April 10, at 5:00 p.m. in room N234. The Membership Meeting brings you up to date on all the SBE activities and programs, and it includes a milestone-service recognition of SBE chapter certification chairs, and updates on the society's plans, programs and government relations efforts. Everyone attending will be eligible to win prizes, including an URSA Broadcast camera (courtesy of the Membership Meeting sponsor Blackmagic Design), a \$250 gift card for Amazon and restaurant gift cards.

You'll want to get to the meeting early as well, because the first 100 people in line will receive an SBE-logoed smartphone stand.

The Membership Reception starts immediately after the meeting at 6:00 p.m. Light snacks and drinks are made possible from the generous support of several Sustaining Member sponsors.



The SBE Member Reception is just one of the many events scheduled for the 2018 NAB Show.

They are listed on page 8.

A big change for the SBE this year is that the SBE booth has

see [NAB SHOW](#), p. 14

The Next SBE Engineer of the Year

Who will the next Engineer of the Year award recipient be? It could be you, it could be someone you nominate. This will be the sixth year that SBE

Chapters will nominate their own Chapter Engineer of the Year award recipients. The chapter honorees are then entered into consideration for the Robert W. Flanders SBE Engineer of the Year award.

Each chapter can establish its own criteria for the chapter award. Individuals can also be nominated directly for the national award. For

the national award, nominations need to be submitted to the National Office by June 15.

There are other honors as well. The James C. Wulliman SBE Educator of the Year; the SBE Technology Award; the John H. Battison Award for Lifetime Achievement; Facility Innovation of the Year; Best Technical Article, Book or Program by an SBE Member; Best Article, Paper or Program by a Student Member; and the Freedom Award are among the accolades. There are also a series of statistical awards.

Of the 13 awards recognizing chapters that are presented each year, a local chapter or SBE member make nominations for 10 of them. Many SBE members are highly qualified and deserving of recognition. Likewise, many chapters do an excellent job promoting the ideals and goals of the SBE. Please nominate these members and chapters so they can re-

ceive the recognition they deserve.

For information on all the award categories, both individual and chapter, please visit sbe.org/awards or contact Megan Clappe at mclappe@sbe.org. Recognition by your peers is the highest honor. Honor your colleagues today.



IN THIS ISSUE

- 4 Letter from the President
- 5 What's on Your Bookshelf?
- 6 Service to Certification
- 8 The SBE @ the NAB Show
- 9 2017 Financial Review
- 10 First Responders
- 14 Member Spotlight



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SBE National Office
317-846-9000 www.sbe.org

SBE Membership Drive Runs through May 1

The SBE Membership Drive began on March 1, and it carries the theme Get Ahead with the SBE. The SBE is the only organization that is devoted to the advancement of all levels and types of broadcast engineering, and SBE membership is the best way to take full advantage of all the organization has to offer.

Recruit a new member during the Drive, and you will be entered into the member drive drawing for prizes donated from

GET AHEAD WITH THE SBE



our Sustaining Members. If you recruit a new Sustaining Member, you'll earn five entries into the prize drawing. And if you recruit three or more Regular or Associate Members or one Sustaining Member you will also receive an upgrade to SBE MemberPlus for the remainder of the 2018 membership period.

Prizes include logo items, books and more. The grand prize is airfare and hotel to attend the SBE National Meeting, held in conjunction with the annual Media Resource Expo 2018 in Danvers, MA, Oct. 2-3, 2018.

And as a further bonus, for every new member you sponsor you will receive \$5 off your 2019 dues (up to \$25).

Full details are on the SBE website. Follow the link on the home page.

Recruiter prizes as of March 7:

305 Broadcast: \$250 Amazon gift card

Cavell Mertz & Associates: \$250 gift certificates (2) for the SBESTore or SBE Bookstore

Comrex: long-sleeved shirt; care package (5); drinking glasses; iPad case and koozie (3); insulated bag, hat and koozie

Davicom: \$100 Amazon gift card
DVEO: tropical shirts and sunglasses
Fujifilm/Fujinon: Fuji Instax Mini 9
Hitachi-Comark: personal speaker systems (2)

JVC: sports headphones (5)

Kathrein: ARRL Antenna Handbook

LBA: Webinar gift certificate

Shively: \$250 L.L. Bean gift card

Tieline: barbecue sets (2); \$25 Visa gift cards (2)

Wheatstone: FM-55 audio processor



Certification Question

Answer on page 6

For the ATSC 8-VSB system, the symbol rate is:

- A. 4.5 MHz
- B. 5.082138 MHz
- C. 10.76 MHz
- D. 19.39 MHz



NAB Booth SU5624

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LETTER FROM THE PRESIDENT

By Jim Leifer, CPBE
SBE President
jleifer@sbe.org

The SBE Yearly Meeting in the Desert

Well it's that time where we all seem to gather in the desert for a week or two of seeing old friends, making new friends, looking at new stuff and learning new technologies. It is the 2018 NAB Show.

There are a lot of events planned and I wanted to focus on a couple of them. When you look for us at the convention, the SBE booth will be in a different spot this year. We will be on the 1st floor of the Las Vegas Convention Center, North Hall lobby near the Starbucks. Come by to renew your membership or just to say hello to fellow members. Don't forget the MemberPlus option when renewing your membership.

The SBE Membership meeting and reception will be held on Tuesday, April 10. The Membership meeting will be held in LVCC N234/N236 at 5:00 p.m.

It all starts with the Ennes Workshop presented by the SBE from 9 a.m. to noon on Saturday. You must have a NAB Conference-level registration to attend. The BEITC will be ongoing with papers given by many fellow SBE members. I encourage you to take some time to support your fellow SBE members and enjoy

the show.

Of course, I need to thank our SBE Sustaining Members, many of which will be exhibiting at this year's show. Please let them know you appreciate their support of your society.

Sunday morning we will have our spring Board of Directors meeting and you are welcome to attend. The SBE will hold several committee meetings during the week, and we thank those involved for your participation. I encourage anyone who wants to get involved to reach out to me or one of the other members of the SBE Board of Directors. We encourage participation from all of our members.

But be sure to save time to attend the membership meeting on Tuesday at 5 p.m. and the member (and friends!) reception after that. We invite you all to attend.

Finally, I want to thank all our national staff and members of the board of directors who find the time to help put this show together each year.

If you see me, please take a minute and say hi. I promise to make time for everyone.

Still Time to Renew Your SBE Membership

It is not too late to renew your membership in the SBE and retain your membership benefits. Those in the Member, Senior, Student, Associate and Fellow membership categories may renew online at sbe.org. Click on "Renew Membership" in the upper right-hand corner of the website home page. The online

system is available 24/7, is secure and accepts Visa, MasterCard and American Express. The system automatically generates a receipt, sent to your email address. You will need your member number and website password to access the renewal system. If you have forgotten your number or password, there is an automated

retrieval system available to you on the renewal page. The renewing member will receive an automated email message confirming the receipt of the payment.



Explore the Webinars by SBE Archive

By now you know that SBE MemberPlus grants you unlimited access to more than 60 Webinars by SBE. While the SBE streams a new, live webinar regularly, all our webinars are archived and ready for on-demand playback. The

latest webinar series covers Broadcast Infrastructure Security. Other recent offerings include the eight-part RF101 series and the annually updated RF Safety webinar. But there are many more subjects available.

In general, webinars fall into one or more of three categories: broadcast technology, broadcast operations, or FCC rules and regulations. It's likely

there are several topics that interest you.

Looking to brush up or learn more about RF? Check out the Transmitter Maintenance Checklist or AM Directional Antenna Modeling. Need to advance on the IT side? There's the IP Networking series, the Advanced IP Networking series and IPv6 for Broadcasters.

Maybe you need to get more information about digital radio. If so, IP Microwave STLs, Deploying Artist Experience via HD Radio, HD Radio Advancement and Trends, or Streaming Radio: a Tutorial for Broadcasters are for you.

Take some time to browse the list of available Webinars by SBE. If you have SBE MemberPlus, they are all free. If you don't have MemberPlus, you can purchase any webinar you want.



sbe.org/webinars

EDUCATION UPDATE

By Wayne M. Pecena, CPBE, 8-VSB, AMD, DRB, CBNE
Chairman, SBE Education Committee
wpecena@sbe.org



What Is On Your Bookshelf?

2018 is well underway and I hope the year brings prosperity and successes in both your personal and professional life. Keep in mind that continuous learning is a key success trait of the technology professional and a new year brings an opportunity to set your professional development goals for the year. Your own self-study is an important aspect of self-learning and your personal library becomes a valuable resource for your professional development. Books and self-study have been a part of my life since my teen years when studying for an amateur radio license, and later the Second and First Class radiotelephone licenses. Several of these legacy texts from the 1960s and 1970s are my prized personal possessions. The American Radio Relay League (ARRL) provided my first introduction to electronics, radio circuitry, and antenna theory with the ARRL Amateur Radio Handbook. *Electronic Communications* by Robert Shrader (1967) became my Second- and First-Class license study guide. The now classic Harold Ennes series of broadcast engineering texts provided my first broadcast engineering knowledge upon becoming employed at a TV station in the early 1970s.

As the SBE Education Committee chair I am often asked, "What are some good books to learn broadcast engineering?" This has often been a challenging question to answer as my bookshelf today, which began with a handful of books, now fills several book cases. The Harold Ennes series, which became the industry standard of the past, is no longer published and is only beneficial today as a history tutorial of past technology. The market is full of books pertaining to specific areas of current broadcast technology from notable authors such as Jerry Whitaker, Charles Poynton, Jim Boston, and Peter Symes. In some aspects it is easier to recommend a bookshelf of books rather than narrowing the recommendation to two or three texts that might be easier on your wallet.

Fortunately, there are three currently published texts that I feel every broadcast engineer should have access to if not on their own personal bookshelf. The *ARRL Amateur Radio Handbook* (2018) is still around and is an incredible source of electronics, radio, and RF propagation theory. Basic electronics, RF theory, and advanced mediums of digital communications are well presented. Even if you have no ambition of becoming an amateur radio operator, this text is an invaluable reference, although you might find the ham radio bug to have bitten you after even a quick look at the diverse topics featured. And the ARRL Handbook is a bargain at a street price of less than \$50. The *SBE Broadcast Engineering Handbook* (2016) is in my opinion the Ennes hand-

book of today with a foundation of theory plus a nuts-and-bolts approach to practical broadcast engineering. Theoretical basics and practical implementation knowledge cover diverse topics ranging from chief operator duties, to solid-state AM/FM/DTV transmitters, to digital workflow, to project management, to IP networking. The *National Association of Broadcasters Broadcast Engineering Handbook* (2017) rounds out my broadcast engineer's personal library recommendations. I have considered the NAB reference as the consulting engineer's handbook. The 11th edition still includes the classic FCC F(50,50) contour charts for coverage prediction, but has been significantly updated to reflect the broadcast technology in use today.

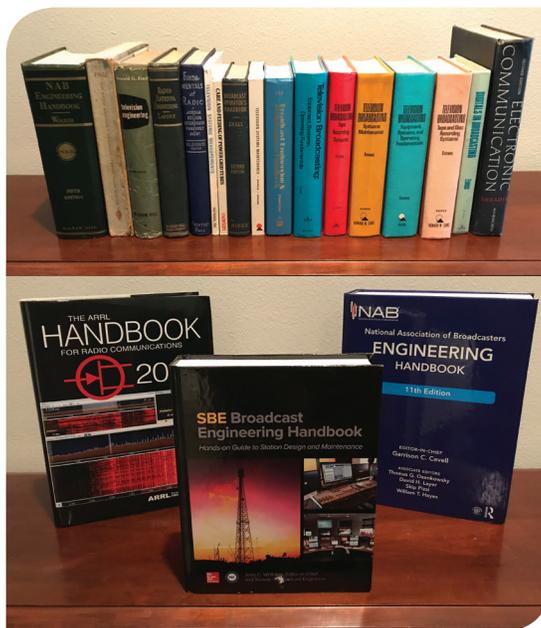
I consider these three as reference texts as you are not likely to read cover to cover as these three volumes combined comprise in excess of 4,100 pages of technical content. In some cases, the SBE and NAB handbooks overlap in content, but the content is presented from theoretical to practical perspectives between the two writings. Each provides a wealth of knowledge whether you are seeking to solve the problem of the day, or wanting to grasp a new area of broadcast technology, or needing guidance in planning a facility upgrade. Even the spectrum of amateur radio modes includes digital TV transmission operated as an amateur TV (ATV) station. Whether you are just starting out in the broadcast industry or you are a seasoned broadcast engineer with years of experience, these three books should be in your personal library. The ARRL and the SBE books are available from the SBE Bookstore at discounted member pricing.

What is your favorite personal library text? Please let me know by email at wpecena@sbe.org.

Cybersecurity

The SBE four-part Cybersecurity 2018 webinar series began this past January and will continue through the end of this month. The webinar series seeks to provide a fundamental understanding of IP network security principals and best practice cybersecurity implementation techniques. The Broadcast Infrastructure Cybersecurity – part 4 webinar will be held on Tuesday, April 24 at 2 p.m. ET and will focus upon network security verification by use of penetration testing tools. With your 2018 MemberPlus SBE membership, this webinar series and all SBE webinars in the on-demand library are available to you at no additional cost.

Your SBE Education Committee wants to know your professional development needs. Lend your advice and guidance to your SBE Education Committee to help establish the right mix of educational content to meet your professional development needs.



Selections from Wayne's legacy (top) and current (bottom) technology bookshelves.

For more information on any SBE education program, contact Education Director Cathy Orosz at the SBE National Office at 317-846-9000 or corosz@sbe.org.



CERTIFICATION UPDATE

By Megan Clappe
Certification Director
mclappe@sbe.org

Certification Service Milestones

The SBE is made up of a multitude of volunteers. There are seven employees who work at the National Office, but the real momentum behind the SBE is those who dedicate their personal time to further the goals and objectives of broadcast engineering through the SBE. This includes, but is not limited to, the Board of Directors, all the various SBE committees in addition to the Certification Committee, and the local chapters including the chapter certification chairs.

Every year at the annual membership meeting during the NAB Show, the SBE recognizes the local certification chairmen who devote volunteer time to the Program of Certification. These local certification chairmen receive a plaque on the recurring five-year anniversaries. What follows is a list of those who will be recognized in April. Thank you very much to all the volunteers who devote so many hours to the SBE and the certification program.

Finally, I want to mention a longtime member of the Certification committee who finished his tenure with the committee at the beginning of the year. Terry Baun, CPBE, AMD, CBNE, spent more than 20 years working on the certification committee as a member and chair. Thank you for the countless hours you have devoted to the advancement of broadcast engineers.

This year we will celebrate an anniversary for one member of the National Certification Committee.

Troy Pennington, CSRE, CBNT, has been a member of the committee for 25 years.

As a side note: I'm pleased to also mention that Larry Wilkins, CPBE, AMD, CBNT and a longtime member of the certification committee has been awarded the *Radio World* Excellence in Engineering Award.



Baun



Pennington

Chapter Certification Chair Service Anniversaries



James Campbell, CPBE; Chapter 103
Rusty Armitage, CPBE; Chapter 113



James Cole, CPBE; Chapter 9
David Shaffer, CPBE, CBNE; Chapter 56



Steve Epstein, CPBE; Chapter 143



Ed Roos, CPBE; Chapter 88



Thomas Green, CSTE; Chapter 45



Samuel Straus, CPBE; Chapter 60



Answer from page 3

The answer is C

Allowing for Nyquist filter roll-off in the 6 MHz channel; the baseband half-power passband is 5.38 MHz. The symbol rate can be twice the passband.

Therefore, $5.38 \text{ MHz} \times 2 = 10.76 \text{ MHz}$.

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The cost to attend is \$670 for SBE members, and \$725 for non-members.

sbe.org/ldc

SBE Certification Achievements

CONGRATULATIONS

LIFE CERTIFICATION

Certified Professional Broadcast Engineer (CPBE)
David Bayliss, Eastwood, Australia - Chapter 126
James Campbell, III, Old Hickory, TN - Chapter 103
Richard Craig, Forest, VA - Chapter 42
David Creel, Gadsden, AL - Chapter 67
Gary Ellingson, Moorhead, MN
Robert Springer, Elkhart, IN - Chapter 126

Certified Senior Radio Television Engineer (CSRTE) AM Directional Specialist (AMD)
Michael Tosch, Burbank, CA - Chapter 47
Certified Senior Radio Engineer (CSRE)
David Dobes, Waterloo, IA - Chapter 65
Certified Senior Television Engineer (CSTE)
Frederick Lewis, Houston, TX - Chapter 105

Certified Broadcast Networking Engineer (CBNE)
Michael Tosch, Burbank, CA - Chapter 47

Certified Broadcast Radio Engineer (CBRE) AM Directional Specialist (AMD)
Philip Mulivor, Cleveland Heights, OH - Chapter 70

Certified Broadcast Radio Engineer (CBRE)
John Masters, Maryville, IL - Chapter 55

Certified Broadcast Television Engineer (CBTE)
Joe Brown, Cottage Grove, OR - Chapter 76

Certified Broadcast Networking Technologist (CBNT)
David Bayliss, Eastwood, Australia - Chapter 126
Manuel Esteve, Pembroke Pines, FL - Chapter 53
Albert Flores, Houston, TX - Chapter 105
John Masters, Maryville, IL - Chapter 55

Certified Television Operator (CTO)
John Johnson, Mesa, AZ

Certified Professional Broadcast Engineers and certified senior broadcast engineers who have maintained SBE certification continuously for 20 years, are at least 59½ years old and are current members of SBE may be granted Life Certification if so requested. All certified who have retired from regular full-time employment and are at least 59½ years old may be granted Life Certification if they so request. If the request is approved, the person will continue in his/her current level of certification for life.

NOVEMBER EXAMS

Certified Broadcast Networking Engineer (CBNE)
Debbie Jones, Corona, CA - Chapter 131

FEBRUARY EXAMS

Certified Broadcast Radio Engineer (CBRE)
Michael Brooks, Seattle, WA - Chapter 16
Brandon Monroe, St. Louis Park, MN - Chapter 17

Certified Broadcast Television Engineer (CBTE)
Carl Budrecki, Tunkhannock, PA - Chapter 2
Certified Audio Engineer (CEA)
Michael Jarnigan, Broken Arrow, OK - Chapter 56

Certified Video Engineer (CEV)
Michael Jarnigan, Broken Arrow, OK - Chapter 56
Ted Nadaskay, Milton, FL - Chapter 118

Certified Broadcast Networking Technologist (CBNT)
Wesley Jones, Canton, MI - Chapter 82
Jim Oster, Chantilly, VA - Chapter 37
Aaron Schaad, Lincoln, NE - Chapter 74

Certified Broadcast Technologist (CBT)
Daniel Riley, Aurora, CO - Chapter 48

Certified Television Operator (CTO)
Ben Duggan, Culver City, CA - Chapter 47
Davis Ho, Culver City, CA - Chapter 47
Guadalupe Paniagua, Oxnard, CA - Chapter 47

SPECIAL PROCTORED EXAMS

8-VSB Specialist (8-VSB)
John Maroon, West Covina, CA
Certified Broadcast Technologist (CBT)
Zhulieta Ibisheva, Honolulu, HI - Chapter 63

CERTIFIED BY LICENSE

Certified Broadcast Technologist (CBT)
David Billeci, San Francisco, CA - Chapter 40
Jarvis Brummitt, San Antonio, TX - Chapter 69

Jeffrey Konrad, Rock Island, IL - Chapter 65
Elliott Rosen, Erial, NJ - Chapter 2

CERTIFIED RADIO OPERATOR (CRO)

Calvin Bailey, Forney, TX
Cedar Ridge High School
Kailseigh Barnes, Newark, AR
Hunter Bear, Newark, AR
Toni Cremeens, Newark, AR
Nicolas Cullum, Newark, AR
Jonathan Kempfer, Newark, AR
Keaton Richardson, Newark, AR
Zachary Rouse, Newark, AR
Robert Ruddell, Newark, AR
Donald Thorne, Newark, AR
Ethan Ward, Newark, AR

Mesquite ISD
Addie Everson, Mesquite, TX
Christian Jaynes, Mesquite, TX
Natash Mutasa, Mesquite, TX
Mario Rodriguez, Mesquite, TX
Parker Smith, Mesquite, TX

Cave City High School
Kyle Branscum, Cave City, AR
Ethan Brashers, Batesville, AR
Noah Brooks, Batesville, AR
Erica Chappell, Batesville, AR
Steven Cothrine, Cave City, AR

Cave City High School (cont.)
Gracie Eddy, Sidney, AR
Jackson Engle, Cave City, AR
Cameron Harvey, Poughkeepsie, AR
Tristin Higginbottom, Cave City, AR
Caleb Martin, Sidney, AR
Ky McFarlin, Evening Shade, AR
Cole Mitchell, Sidney, AR
Joseph Ragsdale, Evening Shade, AR
Destiny Snow, Cave City, AR
Kelly Stephens, Strawberry, AR
Levi Verser, Evening Shade, AR

CERTIFIED TELEVISION OPERATOR (CTO)

Dennis Deleon, Watertown, MA
Nicholas Dion, Watertown, MA

Valerie Ferrante, Milford, MA
Kristen Garand, Amherst, MA

Chris Kung, Watertown, MA

RECERTIFICATION

Applicants completed the recertification process either by re-examination, point verification through the local chapters and national Certification Committee approval and/or met the service requirement.

Certified Senior Radio Engineer (CSRE)
Robert Kelley, Tamuning, GU - Chapter 126

Certified Broadcast Networking Technologist (CBNT)
Robert Kelley, Tamuning, GU - Chapter 126

Certified Television Operator (CTO)
Brandi Bernow, Olmsted Township, OH
Steven Hardinger, North Jackson, OH
Cheryl Lustenberger, Norwood, MA - Chapter 11
Justin Shearin, Henderson, NV

Certified Radio Operator (CRO)
Brandi Bernow, Olmsted Township, OH
Harold Eder, II, Newtown Square, PA
Brian Hay, Peshtigo, WI

Participate in the 2018 Compensation Survey



The SBE is conducting its third (and ongoing) compensation survey now. The SBE launched this annual effort to provide practical information to SBE members about individual compensation (salary

and benefits) based on the type of broadcast or multimedia involvement (beyond just radio and TV), market size and years of experience. SBE members will have access to the full report.

The 2017 survey enjoyed a successful response rate, but as with any survey, a larger sample pool will provide more reliable results.

We encourage every SBE member to

participate to provide a large sample base of responses. All responses are anonymous. With your help we can provide a useful and practical resource to SBE members. Find the survey link in email communications and on the SBE website.

Highlights of the survey will be reported in *The Signal*. The full report will be available for download to members from the SBE website.



SBE Schedule of Events

Saturday, April 7

- **SBE Ennes Workshop** 9 a.m.-12 p.m.
Conference registration required
LVCC North Hall Meeting Room N262/264
- **SBE Certification Committee Meeting** . . . 6:30-11 p.m.
Westgate Resort Conference Room 7

Sunday, April 8

- **SBE Board of Directors Meeting** . . . 8:30 a.m.-12 p.m.
Westgate Resort Conference Rooms 8 and 9
- **SBE Education Committee Meeting.** 3-4 p.m.
Westgate Resort Conference Room 7
- **SBE Frequency Coordination Committee Meeting** 4:14-5:15 p.m.
Westgate Resort Conference Room 7

Monday, April 9

- **Fry's Gift Card Daily Booth Giveaway**
Courtesy of Nemal Electronics

Tuesday, April 10

- **SBE Certification Exams** 9 a.m.-12 p.m.
LVCC N220 (Advance registration required)
- **SBE Frequency Coordinators Meeting** . . . 1:15-2:45 p.m.
(Sponsored by T-Mobile) LVCC N220
- **Fry's Gift Card Daily Booth Giveaway**
Courtesy of LinkUp Communications
- **SBE Spring Membership Meeting** 5-6 p.m.
Blackmagic URSA Broadcast camera giveaway, plus other prizes
LVCC North Hall Meeting Room N234
- **SBE Member Reception** 6-7 p.m.
Multiple prize giveaway
LVCC North Hall Meeting Room N239

Wednesday, April 11

- **Fry's Gift Card Daily Booth Giveaway**
Courtesy of Blackmagic Design

SBE Event Sponsors

SBE Booth Sponsors

Membership Meeting Sponsor

SBE Booth Hours
Booth LN5

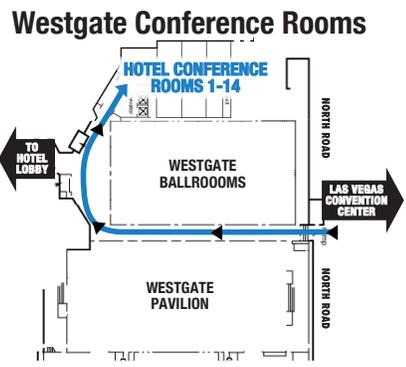
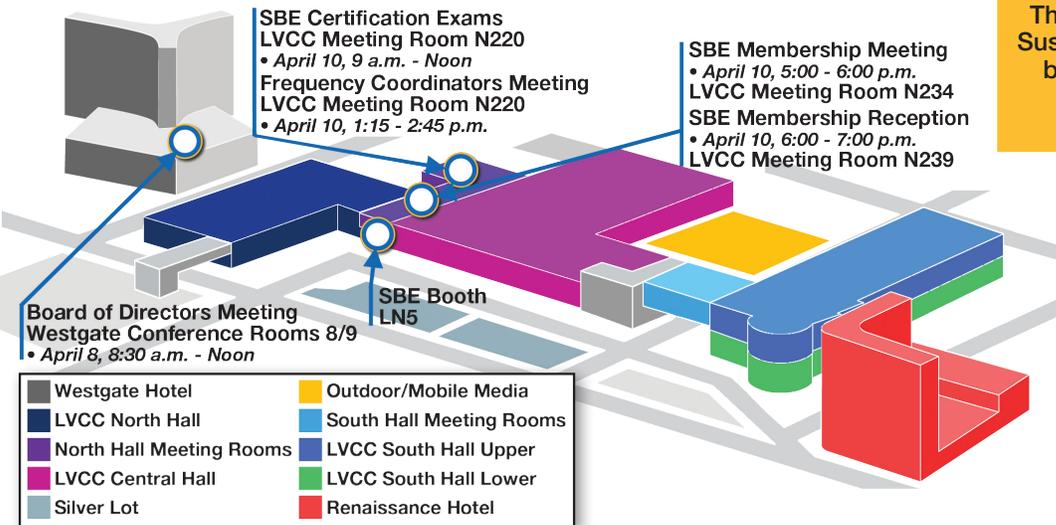
Sunday: 2 p.m. - 4 p.m.
Monday: 10 a.m. - 6 p.m.
Tuesday: 9 a.m. - 4:30 p.m.
Wednesday: 9 a.m. - 6 p.m.
Thursday: 9 a.m. - 2 p.m.

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Reception Bronze Sponsors

Don't Forget the Resource Guide
There's lots more information about SBE Sustaining Members and their convention booth locations in the online Sustaining Member Resource Guide.
sbe.org/sections/guide



Nominations Committee Seeks Board Candidates

By JT Tucker, CSRE, AMD, CBNE

The SBE Nominations Committee work has begun. Members of this committee include: Robert Combs, from Spring, TX; John George Jr., from Lexington, SC; Martin Stabbert, CPBE, from Reno, NV; Joe Snelson, Jr., CPBE, 8-VSB, from Aurora, CO; and chairman Justin Tucker, CSRE, AMD, CBNE, from Charleston, SC.

The SBE Nominations Committee seeks qualified candidates who are voting members (Member, Senior, Fellow or the designated representative of a SBE Sustaining Member) in good standing (dues paid). Candidates must hold an engineering level of SBE certification (CBT or higher, or CBNE) and maintain it the entire duration of service on the Board, if elected. Candidates should have a desire to serve and lead, not only as a member of the board, but through service as a national committee chair or member. Members of the Board are "at large," meaning they represent all members, not any one specific region, state, city or chapter.

Members of the Board are expected to attend two meetings each year; in the spring, held during the annual NAB Show, and in the fall, at the annual SBE National Meeting. Other meetings may be called via conference call during the year.

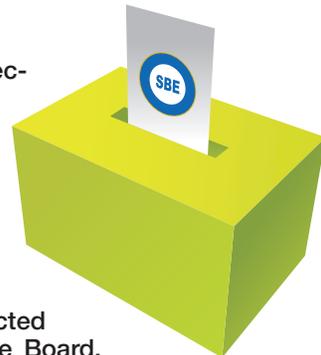
The national SBE board includes 12 directors, four officers and the immediate past president. Directors serve two-year terms and officers serve one-year

terms. Six director seats will be contested in 2018 as will all four officer positions. The SBE By-laws limits the number of terms of elected members of the Board.

Directors may serve three consecutive terms. The secretary and treasurer may serve up to four consecutive terms and the president and vice president may serve up to two consecutive terms. The maximum number of years anyone may serve on the board is ten consecutive years.

Members interested in offering their candidacy and serving on the national Board if elected are encouraged to contact the chairman of the SBE Nominations Committee, Justin Tucker, CSRE, AMD, CBNE, at jttucker@sbe.org or 843-277-1270. A slate of nominees will be assembled by the committee by May 1. Other qualified members may be nominated by members in good standing no later than July 6.

The election takes place from July 20 through Aug. 22. Those elected will be installed into office during the SBE National Meeting in Danvers, MA, on Oct. 3.



These SBE members are presenting at the Broadcast Engineering and IT Conference

- Josh Arensberg, Comcast Technology Solutions
- Fred Baumgartner, ONEMedia/Sinclair Broadcast
- Rich Chernock, Triveni Digital
- Lynn Claudy, NAB
- Thomas Edwards, Fox Networks
- Michael Englehaupt, Graham Media Group
- Richard Friedel, Fox Networks
- Bogdan Frusina, Dejero Labs Inc
- Dave Garner, Hubbard Radio Group
- Kirk Harnack, The Telos Alliance
- Hal Kneller, GeoBroadcast Solutions, LLC
- Karl Lahm, Univision Communications Inc.
- David Layer, NAB
- Scott Matics, Telestream
- Tom Mikkelsen, National TeleConsultants
- Del Parks, Sinclair Broadcast Group
- Karl Paulsen, Diversified
- John Payne, IMT Vislink
- Wayne Pecena, Texas A&M University - KAMU
- Skip Pizzi, NAB
- John L. Poray, SBE
- Mike Raide, HD Radio
- Rich Redmond, GatesAir
- Milford Smith, Smith, Khanna and Guill
- Pete Sockett, Capitol Broadcasting Company
- Martin Stabbert, Townsquare Media Inc.
- James Stellpflug, EVS
- Ken Tankel, Linear Accoustic, Inc.
- Mark Tommey, Silvus Technologies
- Dan Turk, NEP Mobile Unit Division
- Augusto Villasenor, Globecomm
- Sam Wallington, EMF
- Jeff Welton, Nautel

2017 SBE Financial Year in Review

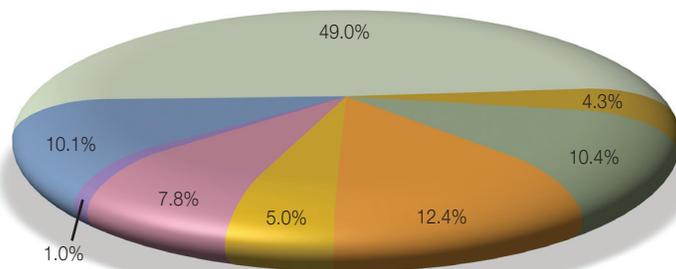
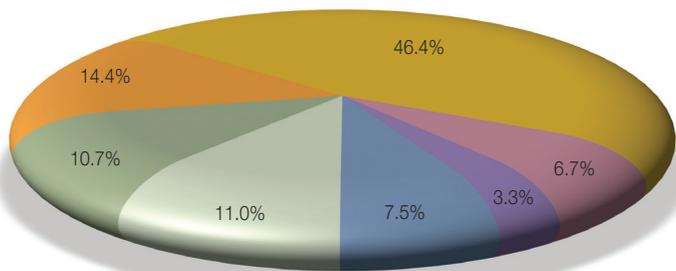
The Society of Broadcast Engineers, Inc. completed 2017 with net revenue from all operations of \$26,320. Gross income from all sources was \$789,060 while expenses were \$762,740. The value of SBE savings and investments as of December 31, 2017, were \$1,096,389. Total SBE assets as of December 31, 2017, were \$1,116,924, an increase of \$21,801 over 2016. Long-

term investment gains totaled \$32,453.

A percentage breakdown of SBE income from program operations and expenses is provided here. A financial statement will be published in the June issue of *The Signal*, following completion of the Society's annual financial audit.

Income from Program Sources

Membership Dues	46.4%
National Meeting	6.7%
Other Income	3.3%
Publications/Advertising (non-Cert)	7.5%
Sustaining Member Dues	11.0%
Certification	10.7%
Education	14.4%



Expenses from All Sources

Member Services	49.0%
National Meeting	4.3%
Administration	10.4%
Certification	12.4%
Chapter Rebates	5.0%
Communication w/Members	7.8%
Depreciation	1.0%
Education	10.1%



LEGAL PERSPECTIVE

By Chris Imlay, CBT
SBE General Counsel
cimlay@sbe.org

Are Broadcasters Really First Responders?

I attended a hearing of the Senate Commerce Committee recently, at which both the ARRL and the NAB had witnesses testify on the respective importance of amateur radio and broadcasting in emergency alerting and disaster response. The FCC had a very compelling witness also: Ms. Lisa Fowlkes, the chief of the Public Safety and Homeland Security Bureau testified on the FCC's investigation of erroneous emergency alerts. It was really riveting testimony from all witnesses, and the hearing was fascinating. It dealt specifically with the "false alarm" of an imminent missile attack in Hawaii recently; how such a thing could happen; why it took more than half an hour to rescind the alert and calm the panic in Hawaii; and how to make sure such a nightmare never happens again. On a broader basis, the hearing testimony provided insight into the function of broadcasters, mobile wireless service providers and amateur radio operators in emergency alerting. The testimony of the NAB was, I thought, simply excellent. It stressed the important role of broadcasters in front-line emergency alerting, and the reliance of the general public on broadcasters to disseminate emergency information in real time. The NAB has asserted that in a disaster situation, 57 percent of the public turns to radio and television broadcast stations for updates and information in emergencies. This is an impressive number in a time of ubiquitous text messaging and other alerting platforms.

So broadcasters are indisputably "kings of the hill" in emergency alerting. But is it fair to call them "first responders"? One might question that label, inasmuch as it is traditionally associated with, and limited to, police, fire and rescue and EMS personnel. Years ago, I prepared some testimony for an ARRL witness at a Congressional hearing about federal support for first responders in spectrum allocations. I likened Amateur Radio ARES and RACES participants to first responders. For that, I had my head handed to me by the then-CEO at ARRL. He told me in no uncertain terms that this would not sit well with first responders who were the principal served agencies of ARES and RACES. I never drew the analogy again.

Last September, the Senate passed S. 102, the Securing Access to Networks in Disaster Act (SANDy as it came to be known; referencing the 2012 superstorm Sandy that ravaged the East Coast). S. 102 was a slightly different bill than H.R. 588, passed in January 2017 by the House, but they have the same basic intent. Since the House and Senate bills are different, the differences had to be resolved by Congress before being sent to the President for signature. Both bills have the same effect with respect to the role of broadcasters in emergencies. They provide for access by "essential service providers" to emergency locations and disaster sites "necessary for establishing temporary or restoring wireline or mobile telephone service, internet access service, radio or television broadcasting, cable service, or direct broadcast satellite service." Both bills specify that the term "essential communications services" means "wireline and mobile telephone service, internet access service, radio and television broadcasting, cable service, and direct broadcast satellite service." This is a great thing. It allows broadcast engineers to access disaster locations to restore broadcast service during or following a major disaster, and it acknowledges the important role of broadcasters in emergency alerting. Some states have adopted "first informer" state statutes that have the same effect. But access by broadcasters in this context must be uniform throughout the 50 states and territories in order to solve the problem of access to disaster areas for re-institution of broadcast service.

Inside Radio last September reported the passage of the SANDy Act by the Senate and claimed that the bill "...designat(ed) radio and TV as 'first responders' during natural disasters." Actually, the legislation doesn't do that exactly. "Essential service providers" and "first responders" are not at all synonymous, and the latter term is not found anywhere in either Bill. NAB has carefully avoided misuse of the term "first responders" as well, and good for them for doing so. The NAB was quoted as saying that when hurricanes hit, as they did last fall, "...hometown radio and TV stations play a lifesaving role as 'first informers' during times of emergencies, and this legislation will provide local broadcasters with access to vital resources to stay on the air when disaster strikes." First informers: absolutely. Access to disaster sites to restore broadcast facilities by broadcast engineers: critical. "Essential Service Providers": absolutely valid description of broadcasters and broadcast engineers. Congress needs to get this legislation to the President pronto and he needs to sign it without any further delay.

But let's not confuse roles here. "First responder" is a term that should be limited to those who really fit the classic description. The term is defined in U.S. Homeland Security Presidential Directive, HSPD-8, which provides the following definition: "... those individuals who in the early stages of an incident are responsible for the protection and preservation of life, property, evidence, and the environment, including emergency response providers as defined in section 2 of the Homeland Security Act of 2002 (6 U.S.C. § 101), as well as emergency management, public health, clinical care, public works, and other skilled support personnel (such as equipment operators) that provide immediate support services during prevention, response, and recovery operations."

Chapter Check

Chapter 14 Connecticut Valley

Chapter 14 met in December for its annual Christmas party in Windsor, CT. The chapter also

held its chapter elections. Chapter Chair Fred Krampits, Chapter Vice Chair Ryan Krupa CBRE, CBNE, and Secretary/Treasurer John Ramsey were reelected, and John Ramsey received a Distinguished Service Award.





FOCUS ON SBE

By John L. Poray, CAE
SBE Executive Director
jporay@sbe.org

Making the Most of SBE MemberPlus

On January 2 of this year, the SBE rolled out a new membership option called SBE MemberPlus. The intent is to provide an increased membership value and more affordable access to SBE educational content.

Traditional membership is still available. For annual membership dues of \$85, it includes bi-monthly issues of The Signal and e-publications including SBE-News, SBE Legislative and Regulatory Alerts and Updates and the SBE Career Advancement Newsletter. Also included are SBE social media outlets, SBE Jobsonline, SBE Compensation Survey results, access to group life insurance and legislative and regulatory advocacy. Traditional membership also provides members with discounts for SBE certification, education programs and purchases at the SBE Bookstore. Members located near one of the 114 local SBE chapters affiliated with the national SBE can participate in their monthly meetings.

The SBE MemberPlus option includes all of the benefits of traditional membership, plus, free access to all of the archived webinars the SBE has produced. It also includes any new SBE webinars we produce during the current membership

cycle. The membership cost for the SBE MemberPlus option is \$175 per year.

So far, the reception to SBE MemberPlus has been excellent. As of March 6, more than 330 members have chosen the SBE MemberPlus option while renewing their membership and another 25 new members have joined who also chose the option. Those 355 members now have access to 62 archived webinars at no additional cost. They also can register for the two remaining modules of the four-part Broadcast Infrastructure Cybersecurity webinar series we are currently presenting, at no cost, and any other SBE webinar to be presented through March 31, 2019.

Webinars by SBE cover a wide range of technical, regulatory and safety topics. There are even a few in the category of leadership, management and communications. They are created and presented specifically for SBE by industry experts. Completion of any SBE webinar qualifies for one SBE recertification credit.

SBE webinars are all available online, around the clock, for access whenever the time is right for you. Members who have chosen the MemberPlus option still register through the SBE website as be-

fore. The registration system recognizes the SBE MemberPlus member and converts the cost to \$0. Once registered, an automated email is sent within minutes that provides the link to the webinar.

So, what are the webinar topics available to you? A sample is shown here.

Some members who have already renewed their membership at the traditional level have asked if they can convert to SBE MemberPlus. The answer is, yes. To convert your traditional membership, contact Scott Jones at the SBE national office at 317-846-9000, or email Scott at kjones@sbe.org. You'll just pay the difference between the two membership options.

I encourage any member who would value the additional educational benefits to consider SBE MemberPlus. The additional membership cost with pay for itself with just the second webinar you take. You will also get the most out of your SBE membership.



Here are just some of the available Webinars by SBE

• SBE Broadcast Infrastructure Cybersecurity – Four Part Series

- Module 1 - Introduction & Network Security Principals
- Module 2 - Understanding the Firewall
- Module 3 - Understanding Secured Remote Access
- Module 4: Security Verification Through Penetration Testing (Live - April 24, 2 p.m. - 3:30 p.m. ET)

• SBE RF Safety Course

• Using Drones in Broadcast Operations

• Fundamentals of IP Networking – Five Part Series

- Part 1 - Introduction to IP Networking Standards & Physical Layer
- Part 2 - Ethernet Switching Fundamentals and Implementation
- Part 3 - IP Routing and Internetworking Fundamentals
- Part 4 - Building a Segmented IP Network Focused Upon Performance & Security
- Part 5 - Cybersecurity Fundamentals & Securing the Network

• HD Radio Diversity Delay Field Observations

• Importance of Proper Grounding

• SBE RF101: Broadcast Terrestrial Transmission Systems – Eight Part Series

- Module 1- Introduction to Radio Frequency (RF)
- Module 2 - Transmission Lines
- Module 3 - Towers, Antennas and Transmission Systems
- Module 4 - Antenna Gain - Feed-line Loss
- Module 5 - Modulation Fundamentals
- Module 6 - AM, FM, TV RF Propagation
- Module 7 - RF Test and Measurement
- Module 8 - FCC Regulations

• IP Network Troubleshooting – Three Part Series

• Update on ATSC 3.0: What it will Mean to Broadcasters

• Managing Your Contract Engineering Business

• Leadership Development Series for Broadcast Engineers

- Part 1 - The Function and Nature of Leadership
- Part 2 - Communication
- Part 3 - Motivation

• Recent Updates to the AC 70/7460-1L for Tower Lighting

• Springtime Maintenance to Keep You on the Air

• Streaming Radio: a Tutorial for Broadcasters

• Chief Operator Responsibilities - What Should I Be Doing?

• TV White Space Devices & Wireless Microphones



ENGINEERING PERSPECTIVE

By Jerry Whitaker, CPBE, 8-VSB
Vice President for Standards Development, ATSC
jwhitaker@atsc.org

ATSC 3.0 at the NAB Show: The Road to Next Generation Television

ATSC 3.0, the next generation broadcast television system, has moved from development to deployment. The 2018 Winter Olympics in PyeongChang, just concluded, was broadcast in 4K video over ATSC 3.0 nationwide in South Korea. Here in the U.S., with approval by the FCC for use of ATSC 3.0, trial implementations are already underway and large-scale deployments are being planned. These efforts and more will be highlighted at the NAB Show.

In addition to displays from many companies in the broadcast equipment ecosystem gearing up for ATSC 3.0, the ATSC itself is coordinating key displays and demonstrations about ATSC 3.0 at the convention. The focus of the exhibits this year shifts from “what’s possible” with ATSC 3.0 to “what’s happening” with deployment.

In the Grand Lobby of the Las Vegas Convention Center, the “Road to ATSC 3.0” exhibit will showcase early deployments of the next-generation TV technology, including test markets that are developing in the U.S. and the South Korean networks that are already using ATSC 3.0 over the air.

In the Futures Park area of LVCC North Hall, ATSC Implementation Teams will showcase two key technologies:

- The ATSC Advanced Emergency Alert Implementation Team will demonstrate end-to-end flow of advanced emergency alerting content. In times of emergency, broadcasting is the most reliable means of disseminating information to the public. ATSC 3.0 supports advanced emergency alerting capabilities, including a wake-up function that enables a receiving device in “sleep” or “stand-by” mode to recognize the presence of an emergency alert and wake up to present the emer-

gency message to the consumer. Broadcasters will have the ability to send not only the basic alert information (text and

and mobile devices, and more accessibility, personalization, and interactivity. The ATSC is also addressing changing consumer behavior and preferences, providing TV content on a wide variety of devices. Furthermore, the ATSC is working to add value to the broadcasting service platform, extending its reach and adding new business models—all without the restriction of backward compatibility with the legacy system.

ATSC 3.0 is being built to last. Technology advances rapidly and so methods to gracefully evolve have been built into the core of the system. An essential capability is to signal when a layer or components of a layer evolve—including the ability to signal minor version changes and updates, and major version changes and updates. The goal of this flexibility is to



The ATSC 3.0 exhibit at NAB Show is in the Grand Lobby of the LVCC, the same location as 2017.

audio), but also associated rich media (such as evacuation and weather maps, video clips, information on shelters, and recovery after the event), which can be geographically targeted.

- The Personalization and Interactivity Implementation Team will demonstrate a practical implementation of the interactive content environment, showing a common program with core advertisements and alternate ads that can be seamlessly inserted into live broadcasts. The ATSC 3.0 interactive content environment is comprised of a standard W3C User Agent with known characteristics, a WebSocket interface for obtaining information from the receiver and controlling various receiver functionality, and an HTTP interface for accessing files delivered over broadcast. Interactive content can be delivered over broadband or broadcast, or both. Capabilities include targeted ad insertion, on-demand content, flexible use of display real estate (e.g., “screen mash-up” and picture-in-picture), tickers, graphics, etc.

The goals of ATSC 3.0 are to improve the television viewing experience with higher audio and video quality, improved and more flexible reception on both fixed

avoid disruptive technology transitions, and to enable graceful transitions from one technology to another.

The ATSC 3.0 standard enables system options for the broadcast industry that include high robustness, spectrally efficient operating points, flexible configuration of operating modes, a robust bootstrap process that includes signaling basic system parameters, channel bonding options for spectrum sharing, and many other capabilities.

In summary, ATSC 3.0 represents a significant step forward in capabilities for a broadcast television system. It provides a set of flexible capabilities for broadcasters that enable new services and new business cases. The concepts of flexibility, extensibility, and scalability are in the core of the system and will allow graceful evolution over a long period of time.

Work in ATSC is open to all with a direct and material interest in the work. If you are interested in participating in any of the ongoing work of the organization, please contact the author. All ATSC standards and recommended practices can be downloaded at no charge from the ATSC website at atsc.org.

Accredited SBE Frequency Coordinators

The SBE provides accreditation to broadcast auxiliary spectrum (BAS) frequency coordinators who agree to conduct their coordination using a voluntary national standard of procedures.

Michael Forman • Philadelphia

- 101 Telco Solutions • 2017**
Erik Hoegh-Guldberg 469-732-3589
Dehydrator and Microwave Repair
- 305 Broadcast • 2015**
Anthony Gervasi 305-406-3560
Broadcast Equipment Supplier
- AC Video Solutions • 2014**
Andrea Cummis 201-303-1303
Consulting, Systems Design/Integration
- AEQ Broadcast International • 2015**
Peter Howarth 954-581-7999
Broadcast Audio, Video and Communications
- American Tower Corporation • 2000**
Peter A. Starke 781-926-4772
Development/Construction/Management
- ATV Broadcast, LLC • 2016**
Doug Smith 317-258-6280
Telecommunications Consulting Group
- Audemat-Worldcast Systems Inc. • 2000**
Christophe Poulain 305-249-3110
Control Manufacturer
- AVCOM of Virginia, Inc. • 2010**
Tom Pagonis 804-794-2500
Spectrum Analyzers
- A-Ware Software/MusicMaster • 2014**
Shane Finch 352-351-3625
Advanced Music Scheduling Solutions
- Belden Electronic Division • 1991**
Sales 800-235-3361
Cable and Connectivity
- Blackmagic Design • 2012**
Terry Frechette 408-954-0500
Production Switchers, Digital Cameras,
Routers, Video Editing and Monitoring, Color
Correction, Video Converters
- Bracke Manufacturing LLC • 2012**
Patra Largent 949-756-1600
RF & Microwave Components
- Broadcast Devices, Inc. • 2015**
Robert Tarsio 914-737-5032
Audio/RF Support Products
- Broadcast Electronics Inc. • 1978**
Tom Beck 217-224-9600
Radio Equipment Manufacturer
- Broadcast Software International • 2016**
Marie Summers 888-274-8721
Radio Automation, Audio Logging
- Broadcast Supply Worldwide • 1986**
Shannon Nichols 800-426-8434
Audio Broadcast Equipment Supplier
- Broadcasters General Store • 2004**
Buck Waters 352-622-7700
Broadcast Audio Video Distributor
- Calrec Audio • 2016**
Dave Lewty 805-305-5711
Audio Mixing Equipment
- Camplex • 2017**
Daniel Coscarella 800-445-7568 x7409
Fiber Optic Cable Assembler
- Canon USA Inc. • 1985**
Larry Thorpe 201-807-3300,
800-321-4388
Broadcast Lenses & Transmission Equipment
- Cavell, Mertz & Associates Inc. • 2011**
Gary Cavell 703-392-9090
Consulting Services
- Comrex Corporation • 1997**
Chris Crump 978-784-1776
Audio & Video Codecs & Telephone Interfaces
- Continental Electronics • 1976**
Dale Dalesio 412-979-3253
TV and Radio Transmitters
- CueScript • 2014**
Michael Accardi 203-763-4030
Teleprompting Software & Hardware
- D2D Technoloies • 2018**
Jessica Colyer 619-248-0618
PSIP & EAS Insertion, IP Gateways,
Multiplexers, SRT Transmission
- Davicom, Division of Comlab, Inc. • 2014**
Louis-Charles Cuierrier 418-682-3380 x512
Remote Site Monitoring and Control Systems
- DEVA Broadcast • 2015**
Todor Ivanov 305-767-1207
Monitors, IP Audio Codecs, RDS/RBDS
Encoders, Audio Processors, Broadcast Tools
- Dialight Corporation • 2006**
US Headquarters 732-919-3119
FAA Obstruction Lighting, LED Based
- Dielectric • 1995**
Cory Edwards 207-655-8131
TV & FM Transmission & Cellular Products
- Digital Alert Systems, LLC • 2005**
Bill Robertson 585-765-1155
Emergency Alert Systems
- DoubleRadius, Inc. • 2012**
Jeffrey Holdenrid 704-927-6085
IP Microwave STL
- Drake Lighting • 2015**
Dave Sheppard 270-804-7383
FAA Obstruction Lighting - Medium and High
Intensity
- DTS Inc./HD Radio Technology • 2014**
Rick Greenhut 443-539-4335
HD Radio Technology
- du Treil, Lundin & Rackley, Inc. • 1985**
Jeff Reynolds 941-329-6000
Consulting Engineers
- The Durst Org. - 4 Times Square • 2004**
John M. Lyons, CPBE 212-997-5508
TV/FM/Microwave Tower Site
- DVEO - Division of Computer Modules Inc. • 2011**
Laszlo Zoltan 858-613-1818
Everything About Transport Streams
- Econco • 1980**
Debbie Storz 800-532-6626,
530-662-7553
New & Rebuilt Transmitting Tubes
- ENCO Systems Inc. • 2003**
Ken Frommert 800-362-6797
Playout and Automation Solutions
- ERI - Electronics Research • 1990**
David White 812-925-6000
Broadcast Antennas, Transmission Line,
Filters/Combiners, Towers and Services
- Fiber Group Inc. • 2016**
Dennis Ford 336-859-2031
Fiber, Video, Satellite and Drone Products
- Floral Systems • 2008**
Shawn Maynard 877-774-1058
Television Broadcast Automation
- Frontline Communications • 2015**
Tracy Brink 727-280-8843
Broadcast Vehicle Manufacturer
- Fujifilm/Fujinon • 1986**
Gordon Tubbs 973-686-2769
Broadcast & Cine Lens Products
- GatesAir • 1977**
Dave Hopson (TV) 513-445-5243
Mark Goins (Radio) 513-899-9124
Broadcast Equipment Manufacturer
- Heartland Video Systems, Inc. • 2011**
Dennis Klas 920-893-4204
Systems Integrator
- Hilights, Inc. • 2016**
Rob Sobol 352-564-8830
Obstruction Lighting Maintenance
- Hitachi Kokusai Electric Comark • 2013**
Jack McAnulty 860-763-1100
Manufacturer Broadcasting Transmission
Equipment
- IMT-Vislink • 2009**
John Procacci 908-747-3011
Wireless Video Systems
- Inovonics Inc. • 2012**
Gary Luhrman 831-458-0552
Radio Broadcast Equipment
- JAMPRO Antennas Inc. • 2011**
Alex Perchevitch 916-383-1177
DTV, FM-HD Radio, DVB-T/T2, ISDB-T, DAB
- JVC Professional Video • 2014**
Lon Mass 973-317-5117
Professional Video Products, Camcorders,
Display Monitors, Recording Devices
- Kathrein USA Inc. • 1985**
Les Kutasi 214-238-8835
Antennas for Broadcasting & Communications
- Kintronc Labs, Inc. • 2015**
Joaquin Raventos 423-878-3141
Radio Broadcast Antenna Systems - ISO9001
Registered Company
- L3 Electron Devices • 2017**
Mark Strohecker 570-326-3561
CEAs, IOTs, Thyratrons
- Lawo AG • 2017**
Michael Dosch 888-810-4468
AoIP Consoles & Virtual Radio
- LBA Technology Inc. • 2002**
Javier Castillo 252-757-0279
AM/MW Antenna Equipment & Systems
- Linkup Communications Corporation • 2017**
Mark Johnson 703-217-8290
Satellite Technology Solutions
- LYNX Technik • 2007**
Steve Russell 661-251-8600
Broadcast Terminal Equipment Manufacturer
- Markertek • 2002**
Wesley Brewer 800-522-2025
Specialized Broadcast & Pro-Audio Supplier
- Micronet Communications Inc. • 2005**
Jeremy Lewis 972-422-7200
Coordination Services/Frequency Planning
- Microtech Gefell GmbH • 2016**
Udo Wagner +49 36649-82245
Microphones
- Microwave Video Systems • 2011**
Warren J. Parece 781-665-6600
Microwave Equipment Rental, Sales & Service
- Middle Atlantic Products • 2005**
David Amoscatto 973-839-1011
Equipment, Mounting, Solutions
- Midtown Video • 2016**
Jesse Miller 305-669-1117
Complete Studio Production Support
- Moseley Associates Inc. • 1977**
Bill Gould 805-968-9621 x785
Digital STLs for Radio and Television
- Nascar Productions • 2014**
Abbey Kielcheski 704-348-7131
Live/Post Production Services
- National Association of Broadcasters • 1981**
Industry Trade Association 202-429-5340
- National Football League • 1999**
Ralph Beaver 813-282-8612
Game Day Coordination Operations
- Nautel Inc. • 2002**
Jeff Welton 877-662-8835
Radio Broadcast Transmitter Manufacturer
- Nemal Electronics Int'l Inc. • 2011**
Benjamin L. Nemser 305-899-0900
Cables, Connectors, Assemblies and Fiber
Optic
- Neutrik USA, Inc. • 2012**
Kathy Hall 704-972-3050
Ruggedized Optical Fiber Systems
- Orban Labs, Inc. • 2011**
David Rusch 480-403-8300
Audio Processing AMFMTV
- Pasternack Enterprises • 2001**
Christine Hammond 949-261-1920
Coax & Fiber Products
- Pebble Broadcast Systems • 2016**
Kurt Schini 612-345-0461
Television Broadcast Playout Automation
- PlayBox Technology • 2017**
Van Duke 561-229-0003
Automation Video Playout Server
- Potomac Instruments • 2012**
Guy Berry 301-696-5550
RF Measurement Equipment Manufacturer
- ProAudio.com- A Crouse-Kimzey Co. • 2008**
Mark Bradford 800-433-2105 x560
Proaudio Broadcast Equipment Distributor
- Propagation Systems Inc. - PSI • 2010**
Doug Ross 814-472-5540
Quality Broadcast Antenna Systems
- Quintech Electronics and Communications Inc. • 2002**
James Herbstritt 724-349-1412
State-of-the-art RF Hardware Solutions
- QVC • 2011**
Kevin Wainwright 484-701-3431
Multimedia Retailer
- Radio Frequency Systems • 2015**
Scott Martin 812-589-4755
Broadcast & Telecom Antennas & Systems
- RF Specialties Group • 2008**
www.rfspecialties.com
Everything from the Microphone to the
Antenna
- Rohde & Schwarz • 2003**
Walt Gumbert 724-693-8171
Transmitters, Test & Measurement, Video
- Ross Video Ltd. • 2000**
Jared Schatz 613-228-0688
Manufacturer, Television Broadcast Equipment
- Sage Alerting Systems Inc. • 2010**
Gerald LeBow 914-872-4069
Emergency Alert Systems Products
- SCMS Inc. • 2000**
Bob Cauthen 800-438-6040
Audio and RF Broadcast Equipment Supplier
- Seacomm Erectors, Inc. • 1997**
John Breckenridge 360-793-6564
Tower/Antenna Erections
- SEG • 2014**
Chris Childs 913-324-6004
Supply Chain Products and Services
- Shively Labs • 1996**
Dale Ladner 888-SHIVELY
FM Antennas & Combiners
- Shure Incorporated • 2012**
Bill Ostry 847-600-6282
Microphones, Wireless Systems, Headsets
- Sierra Automated Systems and Eng. Inc. • 2011**
Al Salci 818-840-6749
Routers, Mixers, Consoles, Intercoms
- Silvus Technologies • 2015**
Mark Tommey 617-816-6588
Wireless Video Mesh Network
- Smarts Broadcast Systems • 2017**
Dave Potratz 800-213-3356
Radio Digital Audio Systems
- Snell Advanced Media • 1995**
John Shike 650-703-4906
Video Equipment Manufacturer
- Solid State Logic • 2014**
Steve Zaretsky 212-315-1111
Digial Audio Mixing Consoles, Networked
Audio Routing, Embedded Audio Solutions
- Staco Energy Products Co. • 2010**
Paul Heiligenberg 937-253-1191 x128
Manufacturer of Voltage Regulators, UPS
- Sutro Tower Inc. • 1989**
Eric Dausman 415-681-8850
Broadcast Tower Leasing
- Tektronix Inc. • 1977**
Jim Lang 503-627-2980
Video Test & Measurement, Equipment
Manufacturer
- Teddyne e2v US Inc. • 1997**
Dominic Piarulli 914-593-6828
Electronic Components
- Televs USA, LLC • 2018**
Andy Ruffin 937-475-7255
ATSC 3.0 Transmission Solutions, Antennas
- Telos Systems/Omnia/Axia • 2003**
Denny Sanders 216-241-7225
Telos Systems Talk-Show Systems
- Teradek • 2011**
Jon Landman 949-743-5783
Camera-top ENG Solutions
- Terrestrial Inc. • 2003**
Billie Layman 888-373-4832
FCC Broadcast Auxiliary Licensing Services
- Tielne The Codec Company • 2003**
Dawn Shewmaker or Jacob Daniluck 317-845-8000
Audio Codec Manufacturer
- Unimar Inc. • 2001**
Thad Fink 315-699-4400, 813-943-4322
Tower Obstruction Lighting Designer,
Manufacturer, Distributor
- Verizon Digital Media/Services • 2015**
Gary Learner 781-221-7400
Media Intelligence and Logging Solutions
- Wheatstone • 2010**
Jay Tyler 252-638-7000
IP Consoles, Routers & Processors
- Wireless Infrastructure Services • 2006**
Travis Donahue 951-371-4900
Repacking Services - West Coast Turnkey
Services

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Member Spotlight: Brian Wood

Member Stats

SBE Member Since: 2013
Certifications: CBTE
Chapter: 74 Midland
Employer: South Dakota Public Broadcasting
Position: Engineering and NOC Manager
Location: Vermillion, SD
I'm Best Known For: learning quickly and finding creative solutions to challenging problems.

Q What do you value most about your SBE involvement?

A Staying connected with the industry and participating in educational webinars.

Q What got you started in broadcast engineering?

A I always wanted to be an engineer; someone who fixes problems and designs things. I also enjoyed working with video and editing movies as a kid, so when I found out both could be combined in a career, it was the perfect match.



Brian often rides his bike to and from work each day.

Q What do you like most about your job?

A Every day is different and I enjoy finding solutions to make things more efficient!

Q When I'm not working I...

A ...I enjoy spending time with my wife and three children. I also enjoy bicycle commuting, playing the piano, and volunteering with my church.

Q What's something most people don't know about you?

A I got accepted to college on another student's transcript (he had the same name as me). Fortunately, he was a

better student than I was.

Q What's your favorite gadget?

A A Leatherman tool and a flashlight. They're on my belt every work day.

Freinwald Receives NAB Honor

The National Association of Broadcasters (NAB) will present the NAB Engineering Achievement Awards at the 2018 NAB Show. Among the recipients is SBE Fellow member Clay Freinwald of Freinwald Technical Services, Auburn, WA. He and his fellow recipients will be recognized at the We Are Broadcasters Celebration on April 10 during the convention.



Freinwald

Freinwald will receive the 2018 Service to Broadcast Engineering Achievement Award. Clay Freinwald began his broadcast engineering career in 1961 and has held various technical positions at numerous stations and station groups, including Tacoma News Tribune, Viacom and Entercom. He is a

Fellow member of the Society of Broadcast Engineers (SBE). He served on the SBE Board of Directors and as vice president from 2005 to 2007.

He is a founding member of the Broadcast Warning Working Group, helping broadcasters and others understand and implement EAS technology. Freinwald has served as chairman of the Washington State EAS Committee for more than 20 years and chaired the SBE

EAS Committee for a decade.

Established in 1959, the Engineering Achievement Award recipients are nominated by their peers for significant contributions to advancing the state of the art in broadcast engineering.

NAB SHOW from p. 1

moved to the North Hall lobby just off the Grand Lobby. The official booth number is LN5. We're near Starbucks.

Check the complete event schedule on page 8 of this issue. We also have an NAB Show events page on our website. Another helpful resource to plan your convention time is our SBE Sustaining Member Online Resource Guide. Find it at the SBE website. With these resources, you'll find details for several committee meetings, the board of directors meeting, SBE certification exams, and the daily booth prize drawing.

See you in Las Vegas!

ENNES

EDUCATIONAL
FOUNDATION TRUST

The trust offers scholarship and educational programming and grants that benefit broadcast engineering and the broadcast engineer. Submit tax-deductible donations, payable to the Ennes Educational Foundation Trust, to the Society of Broadcast Engineers; 9102 N. Meridian St., Suite 150; Indianapolis, IN 46260.

THANKS TO THE FOLLOWING SUPPORTERS FOR THEIR CONTRIBUTIONS

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Jay Adrick; Cincinnati, OH
 Thomas Alderson; Spokane, WA
 Ron Bartlebaugh; North Canton, OH
 John Byrne, Jr.; Lyndell, PA
 Cristan Caughill; Honolulu, HI
 Ralph Chambers; Ft. Lauderdale, FL
 Jorge Conde; Guayama, PR
 Eric Fredricey; Santa Barbara, CA

John Heimerl; Suffolk, VA
 Craig Holderbaum; Annandale, NJ
 Kevin Hornberger; Plainfield, IL
 John Huntley; Rockford, IL
 Victor Jester; Marietta, GA
 Carl Kissner; Royal Oak, MI
 Jan Pritzl; Milwaukee, WI
 John Turner; Mountain Lakes, NJ
 David Turnmire; Pocatello, ID

Robert E. Greenberg Scholarship

Ron Bartlebaugh; North Canton, OH
 Craig Fox; Syracuse, NY
 Eric Fredricey; Santa Barbara, CA
 Carl Kissner; Royal Oak, MI
 Milford Smith, Jr.; Lawrenceville, NJ

John H. Battison SBE Founder's Scholarship

Ron Bartlebaugh; North Canton, OH
 William Cordell; Richmond, TX
 Eric Fredricey; Santa Barbara, CA
 Ronald Huckleby; Butte, MT
 Carl Kissner; Royal Oak, MI
 John Turner; Mountain Lakes, NJ

Youth Scholarship

Ron Bartlebaugh; North Canton, OH
 Maria Dudzak; Ketchikan, AK
 Kyle Facey; Portland, ME
 Marc Fenton; Moreno Valley, CA
 Gregory Foss; Riverside, CA
 Eric Fredricey; Santa Barbara, CA
 James Grimes; Evanston, IL
 Carl Kissner; Royal Oak, MI
 Kishore Persaud; Catonsville, MD
 Leonard Watson; Chicago, IL
 S. Merrill Weiss; Metuchen, NJ

NEW MEMBERS

Muthana M. Al-wazni - Springfield, VA
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Bob Moore - Lebanon, MO
Danny Murillo - Dallas, GA
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Luis R. Sanchez - Aguirre, PR
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Nick Straka - Hackettstown, NJ
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Johnny G. Wilson - Columbus, OH

WELCOME TO THE SBE

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Lorimer D. Eaton, III - Oakland, CA
Anthony D. Greer - Chicago, IL
Cole B. Thomas - Toledo, OH

NEW ASSOCIATE MEMBERS

Wendy Fostiak-Amos - Yarnell, AZ
Elliot M. Rosen - Erial, NJ

NEW YOUTH MEMBERS

Evan A. Ferrell - Tijeras, NM

REINSTATED MEMBERS

Juan P. Alviz - Miami, FL
Richard Anderson - Highlands Ranch, CO
John M. Banks - Kerrville, TX
Adam Barry - Burke, VA
Frederick J. Bennett - Las Vegas, NV
Robert H. Branch, Jr. - Lynchburg, VA
Robert Bush - Mechanicsville, VA
Rodney J. Byers - Phoenix, AZ
Daniel I. Cadavieco - Celebration, FL
James B. Cole - San Antonio, TX
Brian D. Cook - Plymouth, IN
Gustavo Covarrubias - Burbank, CA
Jack D. Dillon - Ruskin, FL
Cherish A. Dollar - Las Vegas, NV
David E. Donaldson - Alexandria, VA
Nick A. Elliott - Ellensburg, WA
Tommy J. Evans - Missoula, MT
Robert D. Fields - San Antonio, TX
Darnell B. Forde - San Diego, CA
Jaime D. Gonzalez - Fresno, CA
Timothy Gorry - Florissant, MO
Jeffrey Harmison - Columbus, OH
Terry J. Harvey - Syracuse, NY
Byron J. Johnson - Ayden, NC
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Add the SBE Ennes Workshop to Your NAB Plans

By Tom Mikkelsen

Once again, the SBE is coordinating the Ennes Workshop program at the 2018 NAB Show on Saturday, April 7. This program will be our 23rd year since it first began in 1995. Please note due to various reasons this year is a two-part morning session only, running from 9 a.m. to 12 noon at the Las Vegas Convention Center.

"Tomorrow's Media Tool Box - Today" is the focus of the presentations. It is one thing to discuss and predict the unknown

future of media, however we have knowledge and tools available today that will help you dovetail tomorrow's media into your day-to-day projects and workflows.

IP is on everyone's minds, not so much as a question anymore, but more about how to use it correctly and take advantage of its benefits. The first half of our morning session will focus on IP networking, implementations in the real world, and a presentation of how IP will be used in the new OTT/OTA systems.

Part two of our morning will shift the Media Toolbox focus to Social Media influencing viewership, an understanding of Microservices, and then concluding with implementation of cyber security in our station operations.

The schedule of presentations follows. We look forward to seeing our members and attendees participate in this always topical and timely discussion of issues in the broadcast industry on Saturday morning 9 a.m. to noon at the LVCC. 

9:00 a.m. - 9:10 a.m. Welcome

Tom Mikkelsen, Senior Account Executive, National TeleConsultants; John L. Poray, CAE, Executive Director, Society of Broadcast Engineers

9:10 a.m. - 9:35 a.m. IP Networking for Real Time Video

Robert Welch, Technical Solutions Lead, Arista Networks
ST 2110 is all about professional media over managed IP networks. Welch reveals the considerations and design architectures for building, maintaining and operating the all IP real time workflow.

9:35 a.m. - 9:55 a.m. Is IP Real?

Stan Moote, CTO, IABM

The panel will hit the hard facing details about real time IP from the supplier through system integrator to end-users. Stan will prime the discussion with current industry questions. Attendees are welcome to also ask questions from business through to technical matters about real time IP in general including SMPTE ST-2110.

9:55 a.m. - 10:20 a.m. Next Gen is OTT/OTA

Fred Baumgartner, CPBE, CBNT, Director Next Generation TV Implementation, ONEMedia/Sinclair Broadcast

Next Gen is an overlay of the existing Internet. This IP-based overlay is the ultimate over-the-top (OTT) platform being broadcast over-the-air (OTA). Linear TV as we know it stops at the ATSC 3.0 air chain and from that point; it is the world of streaming video, ad-tech and the user experience (UX).

10:40 a.m. - 11:05 a.m. Social Media Drives Local TV Viewership

Emily Stone, Director of Multi-Platform Content, WTTG, Fox 5
Social media is considered as a necessary evil by many broadcasters, so the question comes down to how to not only accept it, but also how to capitalize on social interactions. The secret is about having a compelling social media strategy tied directly into station activities - but what does this really mean?

11:05 a.m. - 11:30 a.m. What are MicroServices and Why Should We Care?

Glodina Lostanlen, Chief Marketing Officer, Image Communications

Microservices are the software-based building blocks that have been instrumental to the success of Google, Amazon and essentially every other digital business that has gained commercial prominence in the past decade. It is critical to broadcast companies' long-term success to understand and begin to adopt a microservices-based architecture.

11:30 a.m. - 12:00 p.m. Cyber Security Hygiene in IP Broadcast Systems

Denis Onuoha, Chief Information Security Officer, Arqiva
Everyone knows cyber security is a key element in the media and entertainment business. The question is how to implement this in a practical manner. Denis will explain how to deal with tangible items like change management, passwords, the reality of air gaps, maintenance and legacy equipment.

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MEMBERS ON THE MOVE



◀ **Joe Geerling, CPBE**, CBNT, is director of engineering, Entercom St. Louis.

▶ **Al Kenyon** is IPAWS customer support branch chief at FEMA in Washington, DC.

▶ **Dave Dybas, CBRE**, AMD, has launched AM-Detuning.com to serve telcom providers.

▶ **Kent Randles, CBRE**, is director of operations for Entercom Portland, OR.



▶ **Kevin Ruppert, CPBE**, CBNT, has been promoted to chief engineer of WISC-TV, Madison, WI.



◀ **David Bialik, CBT**, is director of stream operations at Entercom, New York.



▶ **Jason Ornellas, CBRE**, CRO, is market chief engineer of Bonneville Sacramento following the CBS/Entercom merger.



Have a new job? Received a promotion? Let your fellow SBE members know. Send your news to Chriss Scherer at cscherer@sbe.org.

MARK YOUR CALENDAR

SBE Compensation Survey

online
April 1 - May 15, 2018 sbe.org

NAB Show

Las Vegas, NV
April 7 - 12, 2018 nabshow.com

Ennes Workshop

NAB Show
April 7, 2018 sbe.org/ennes

SBE Certification Exams

NAB Show
April 10, 2018 sbe.org/certification
Application deadline closed

SBE Membership Meeting

NAB Show
April 10, 2018 sbe.org

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